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1 On missile simulations under interrupted guidance conditions 92%
Naim A. Kheir , Donald W. Sutherlin
Proceedings of the 11th conference on Winter simulation - Volume 1 December 1979

Several guidance laws have been proposed in the past for defense systems. Applications vary from tactical missiles (with different ranges) to target motion analysis (TMA) in naval combat control systems. Guidance techniques are typically classified as either classical or modern with the emphasis on modern being placed on techniques derived from optimal control. The motivation behind this paper is to consider the important applications where, an interceptor missile tracks on radar energy tha ...

2 Modeling the initialization process of a space-launched kinetic energy weapon 88%
William A. Laidig , Harold L. Pastrick
Proceedings of the 18th conference on Winter simulation December 1986

A six degree-of-freedom simulation modeling an SDI space-based kinetic energy weapon is examined to analyze the models which represent the interceptor component initialization scheme. The initialization scheme consists of the first downlink of target information from the radar platform to the launch platform, the handing down of launch platform initial parameters to the interceptor, the predicted impact point algorithm and launcher training, and the interceptor on-board Kalman filter and ta ...

3 Military applications: Case study in modeling and simulation validation methodology 85%
Scott D. Simpkins , Eugene P. Paulo , Lyn R. Whitaker
Proceedings of the 33nd conference on Winter simulation December 2001

The military develops simulations to analyze nearly every aspect of defense. How accurate are these simulations and to what extent do they produce dependable results? Most guidance available to DoD analysts provides broad recommendations geared towards management and coordination of the validation processes. Here, we focus on practical validation from the analyst's perspective in the form of a case study. The platform used is the theater missile defense (TMD) aspects of Extended Air Defense Simu ...

4 Real time information processing II: Automatic error recovery in the Nike-Zeus guidance computer 85%

G. A. Champine , G. M. Griffith

Proceedings of the 1962 ACM national conference on Digest of technical papers September 1962

A REAL-TIME SYSTEM cannot, by definition, afford the shock of errors to disrupt its reaction to the real events relating to the system. This presentation will show how the complete recovery from transient errors can be accomplished and how some types of catastrophic (solid) errors can be ignored with a minimum of shock to the system. The system to be described is one developed for the Nike-Zeus guidance computer system The Nike-Zeus Target Intercept Computer (TIC ...

5 A successful example of a layered-architecture based embedded development with Ada 83 for standard-missile control 83%

Kelly L. Spicer

ACM SIGAda Ada Letters December 2000

Volume XX Issue 4

A need for a standard understandable software architecture that can be reused from project to project has long been recognized. This paper describes the software architecture used for the Standard-Missile-3 (SM-3), Stage-3 development program. The architecture was defined based on hierarchical principles with the goal of providing a general solution for the architecture-level design for embedded systems. An architecture-need statement is first presented listing the attributes of the needed archi ...

6 Flight test analysis of missile control systems 82%

Mark Domaszewicz

Proceedings of the 14th design automation conference January 1977

Generalized missile flight test analysis is discussed, emphasizing postflight techniques utilizing control system and airframe models driven by telemetry signals. Examples illustrate the quantitative aspects.

7 Military applications: JWARS output analysis 80%

H. Ric Blacksten , James W. Jones , Michael L. Poumade , Haywood S. Osborne , George F. Stone

Proceedings of the 33nd conference on Winter simulation December 2001

The Joint Warfare System (JWARS) is being equipped with a growing set of tools for microanalysis of single replications and for macro-analysis across multiple replications. These include tools embedded in the JWARS HCI (human-computer interface) to provide graphical and textual reports for immediate review, tools to capture campaign results data in a database for later analysis, and post-processing tools for processing such data into reports to support the decision maker.

8 An analysis of the resources used in the SAFEGUARD system software 80%

development
W. E. Stephenson
Proceedings of the 2nd international conference on Software engineering October 1976

The SAFEGUARD System represents the development of one of the largest, most complex software systems ever undertaken. Various types of software were developed, including real time applications, support, and hardware installation and maintenance. Two million instructions were developed at a cost of approximately five thousand staff years of effort. The objective of this paper is to document the staff resources utilized in this development. The actual development rates for the different types ...

9 A process-oriented methodology for assessing and improving software trustworthiness 80%
Edward Amoroso , Carol Taylor , John Watson , Jonathan Weiss
Proceedings of the 2nd ACM Conference on Computer and communications security November 1994

A high-level, technical summary of the Trusted Software Methodology (TSM) is provided in this paper. The trust principles and trust classes that comprise the TSM are presented and several engineering investigations and case studies surrounding the TSM are outlined. Appendices are included that highlight important areas of the TSM.

10 The development of the General Purpose Simulation System (GPSS) 77%
Geoffrey Gordon
The first ACM SIGPLAN conference on History of programming languages March 1975
Volume 10 , 10 , 17 Issue 2 , 2 , 4

The General Purpose Simulation System (GPSS) is a programming system designed for the simulation of discrete systems. These are systems that can be modeled as a series of state changes that occur instantaneously, usually over a period of time. Complexities in their analysis arise because there are many elements in the system, and there is competition for limited system resources. The simulation technique uses numerical computation methods to follow the system elements through their changes ...

11 Expert system on a chip: an engine for real-time approximate reasoning 77%
M Togai , H Watanabe
Proceedings of the ACM SIGART international symposium on Methodologies for intelligent systems December 1986

The role of inferencing with uncertainty is becoming more important in rule-based expert systems (ES), since knowledge given by a human expert is often uncertain or imprecise. We have succeeded in designing a VLSI chip which can perform an entire inference process based on fuzzy logic. The design of the VLSI fuzzy inference engine emphasizes simplicity, extensibility, and efficiency (operational speed and layout area). It is fabricated in 2.5 &mgr;m CMOS technology. The inference engine con ...

12 Computer system reliability and nuclear war 77%
Alan Borning
Communications of the ACM February 1987
Volume 30 Issue 2

Given the devastating consequences of nuclear war, it is appropriate to look at current and planned uses of computers in nuclear weapons command and control

systems, and to examine whether these systems can fulfill their intended roles.

13 An integrated analytical system for global range planning 77%

T. E. Williamson

Proceedings of the 1967 22nd national conference January 1967

The mental image formed upon the first attempt to focus on a problem of the scope involved in systematizing the planning and scheduling functions of a space vehicle tracking range is truly overwhelming (Figure 1). Further investigation, however, while not diminishing the elephantine proportions of the problem, reveals considerable detail of importance. First, there was already at hand at the Air Force Eastern Test Range specific ADP capabilities that could be used almost directly ...

14 Real-Time Simulation For Verification Of Tactical Electronic Warfare System 77%

Carmine A. Vaccarino , George Konomos

Proceedings of the 1978 annual conference December 1978

In recent years, electronic warfare (EW) systems have become more and more reliant upon digital technology. Usually they include a digital computer with appropriate software programs used to control the various functions of the system, analyze EW signals, and in some cases, command the countering of the same signals. One of the first digital systems, truly software programmable, is the F-15 Tactical Electronics Warfare System (TEWS). The AFAL developed F-15 TEWS Automatic Airborn ...

15 Fast detection of communication patterns in distributed executions 77%

Thomas Kunz , Michiel F. H. Seuren

Proceedings of the 1997 conference of the Centre for Advanced Studies on Collaborative research November 1997

Understanding distributed applications is a tedious and difficult task. Visualizations based on process-time diagrams are often used to obtain a better understanding of the execution of the application. The visualization tool we use is Poet, an event tracer developed at the University of Waterloo. However, these diagrams are often very complex and do not provide the user with the desired overview of the application. In our experience, such tools display repeated occurrences of non-trivial commun ...

16 Verification, validation and accreditation: An integrated approach to verification, validation, and accredition of models and simulations 77%

Don Caughlin

Proceedings of the 32nd conference on Winter simulation December 2000

In an M&S-Based Systems Acquisition, computer simulation is used throughout the development process not just as an analysis tool but also as a development tool. In general, development of a system capability using M&S-Based Systems Development will result in multiple models or simulations to meet specific needs. The Verification, Validation and Accreditation (VV&A) of each these tools is integral to M&S development. Integrating Verification and Validation (V&V) activities with M&S development an ...

17 Columns: Risks to the public in computers and related systems 77%

Peter G. Neumann

ACM SIGSOFT Software Engineering Notes May 2000

Volume 25 Issue 3

18 Pitfalls and safeguards in real-time digital systems with emphasis on programming 77%

W. A. Hosier

Proceedings of the 9th international conference on Software Engineering March 1987

Real-time digital systems are largely a technical innovation of the past decade, but they appear destined to become more wide spread in the future. They monitor or control a real physical environment, such as an air-traffic situation, as distinguished from simulating that environment on an arbitrary time scale. The complexity and rapid variation of such an environment necessitates use of a fast and versatile central-control device, a role well suited to digital computers. The usual system w ...

19 Illustrative risks to the public in the use of computer systems and related technology 77%

Peter G. Neumann

ACM SIGSOFT Software Engineering Notes January 1996

Volume 21 Issue 1

20 Image Models 77%

Narendra Ahuja , B. J. Schachter

ACM Computing Surveys (CSUR) December 1981

Volume 13 Issue 4

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